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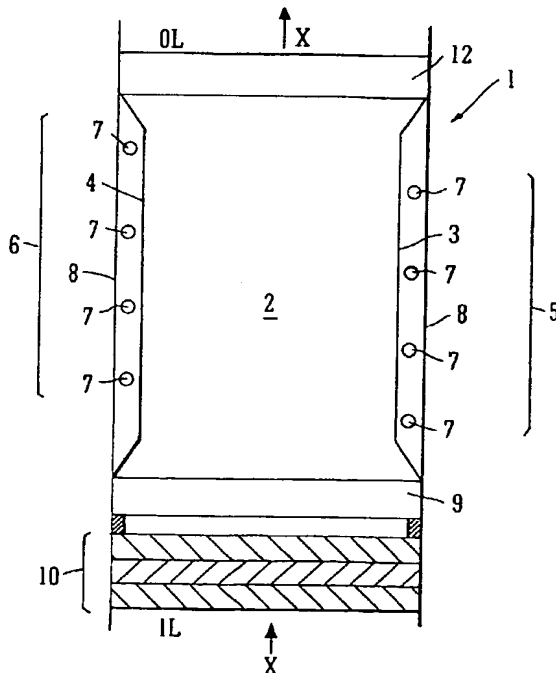
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| 0321326.1 | 11 September 2003 (11.09.2003) | GB | |

[Continued on next page]

(54) Title: CLEANING OF AIR



(57) Abstract: Apparatus (1) for cleaning air comprises a chamber (2) having an inlet (IL) and an outlet (OL), through which air to be cleaned is passable, a plurality of UV light sources (7) to irradiate the interior of the chamber (2) and one or more UV transmissible shield members (3, 4) isolating the UV light sources (7), in use, from the air to be cleaned and wherein at least some of the UV light sources (7) are mounted on a common mounting means such that said some of the UV light sources (7) are removable together from the apparatus (1). The apparatus (1) may comprise an upstream filter (9) and an air equalising grid (10). The grid (10) may have a UV reflective surface.

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/GB 03/04540

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A61L9/20

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 A61L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 656 242 A (MORROW WILLIAM ET AL) 12 August 1997 (1997-08-12) column 2, line 18 - column 3, line 32; claim 11; figures 1,1a,3 column 4, line 27 - column 4, line 52 column 4, line 1 - line 6	1,2,11, 12, 14-16, 20-26
A	PATENT ABSTRACTS OF JAPAN vol. 1999, no. 12, 29 October 1999 (1999-10-29) & JP 11 197229 A (HONDA ACCESS CORP), 27 July 1999 (1999-07-27) cited in the application abstract	1,2

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

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"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

10 February 2004

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INTERNATIONAL SEARCH REPORT

International Application No
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 6 464 760 B1 (SHAM JOHN C K ET AL) 15 October 2002 (2002-10-15) column 4, line 7 - line 28; figures 1,9-12 -----	13,24
A	US 4 766 321 A (STRANAHAN MICHAEL ET AL) 23 August 1988 (1988-08-23) column 2, line 13 - line 61; figures 1,2 -----	17-19,22
A	US 3 937 967 A (STEINITZ KURT) 10 February 1976 (1976-02-10) column 3, line 22 - line 29 -----	14,15

INTERNATIONAL SEARCH REPORT

International application No.
PCT/GB 03/04540

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:
1, 2, 11 - 31, 33, 34

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1,2,11-31,33,34

The first invention is directed to an apparatus for cleaning air comprising a plurality of UV light sources and a UV transmissible shield member wherein at least some of the UV light sources are mounted on a common mounting means such that said some of the UV light sources are removable together from the apparatus.

2. claims: 3,4,7-10

The second invention is directed to an apparatus for cleaning air comprising a UV light source, a UV transmissible shield member, and a filter means upstream of the UV light source wherein upstream of the filter an air flow equalising means is located.

3. claims: 5,6

The third invention is directed to an apparatus for cleaning air comprising a UV light source, a UV transmissible shield member, and a filter means upstream of the UV light source wherein upstream of the filter means a UV reflector is located.

4. claim: 32

The fourth invention is directed to an apparatus for cleaning air comprising a plurality of UV light sources, a UV transmissible shield member comprising a tunable power source controlling two UV light sources in feedback mode according to an UV monitoring means associated with the two UV light sources.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/GB 03/04540

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5656242	A	12-08-1997	CA 2178461 A1 GB 2302004 A ,B	08-12-1996 18-12-1996
JP 11197229	A	27-07-1999	NONE	
US 6464760	B1	15-10-2002	NONE	
US 4766321	A	23-08-1988	US 4694179 A	15-09-1987
US 3937967	A	10-02-1976	NONE	